

## INFORMATION SHEET

ORDER NO.  
SYNGENTA SEEDS, INC.  
WOODLAND SEED PROCESSING FACILITY  
YOLO COUNTY

Syngenta Seeds, Inc. operates a seed crop production and seed washing facility on a 160-acre parcel 1.5 miles south of Woodland. In April 2004, the Yolo County Environmental Health Department discovered that Syngenta Seeds, Inc. was discharging process wastewater to a drainage ditch that flows to Willow Slough, and referred the Discharger to the Regional Water Board to obtain WDRs. The facility has been in operation since 1972, and had been discharging process wastewater to leachfields and an adjacent drainage ditch that drains to Willow Slough. The Discharger ceased the discharge to surface waters on request and began land-applying wastewater in accordance with an interim operations plan submitted in June 2004 pending adoption of WDRs.

Since then, the Discharger has consolidated outdoor processing into a single area, installed a finer wastewater screen, expanded the wastewater land application area, installed a sprinkler irrigation system, and planted perennial grass in the wastewater land application area. These changes have reduced waste constituent loadings, and there have been no complaints about the Discharger's operations since the original referral by Yolo County.

The Discharger grows peppers, tomatoes, watermelons, cantaloupe, and squash on approximately 130 acres, including several greenhouses. Beginning in July and continuing intermittently through October, the crops are harvested and processed to remove their seeds. The amount of fruit processed each year has varied from 88 to 173 tons for the last three years.

Seed processing takes place outdoors on concrete slabs that drain to a septic tank. Process wastewater is screened to remove solids before it is pumped to the wastewater land application area sprinkler system. The total annual wastewater volume ranged from 197,000 to 400,000 gallons per year for the last four years. Screened solids are collected in a bin for land application with the other residual solids removed during processing.

The greenhouses have evaporative cooling systems. Most of them are closed loop systems with no waste discharge. However, six greenhouses generate small volumes of saline water that is drained from the system to reduce salt accumulation on the cooling pads. The greenhouse cooling system wastewater is commingled with the process wastewater and applied to land.

The combined process and greenhouse wastewater is typically high in degradable organics, nitrogen, and salinity. Although the high salinity is due in part to salts naturally present in the fruit, various saline chemicals are used to aid in processing, treat the seeds to control microbial diseases, and sterilize seedling trays used in the greenhouses.

The 1.6-acre wastewater land application area is divided into seven irrigation checks. Manual valves are used to control the flow to each check. The land application area was recently planted with perennial rye grass, which is periodically mowed. The cuttings are typically not removed. The Discharger proposes a flow limit of 493,000 gallons per year for the combined

process and greenhouse wastewater, which is equivalent to 11 inches of water per year. The Discharger adds supplemental fresh water as needed to sustain the grass.

Based on information presented in the Report of Waste Discharge (RWD) the estimated cycle average BOD loading is approximately 50 pounds per acre per day, and the estimated peak (or instantaneous maximum) BOD loading is approximately 396 pounds per acre per day. However, due to highly variable daily flows and BOD concentrations, actual BOD loadings in 2007 were as high as 70 pounds per acre per day as a cycle average, and 1,100 pounds per acre per day as a peak daily rate.

A cycle average loading of 100 lb/ac/day and a peak daily loading equal to that value multiplied by the cycle time in days should be sufficient to prevent nuisance and protect groundwater quality. Based on the cycle time proposed in the RWD, the peak daily loading rate should not exceed 800 lb/ac/day. A high peak daily loading rate may not necessarily cause nuisance conditions, particularly if it occurs infrequently and is not the result of organic solids accumulation on the ground surface or sustained ponding of wastewater in the land application area. The Discharger may be able to improve control of the peak daily loading rate by correlating historical BOD concentrations for the type of fruit processed to determine when lower application volumes and shorter cycles are needed to reduce the peak BOD loading.

The estimated total nitrogen load to the wastewater land application area is 280 pounds per acre per year, and approximately 224 pounds per acre per year would be plant available. Typical nitrogen requirements for turf grasses are 225 to 260 pounds per acre per year, so the proposed nitrogen loading rates are not excessive.

The Discharger has designated a land application expansion area to be used if needed to comply with the loading rate limitations of this Order. If wastewater concentrations are similar to previous years, full expansion up to 3.0 acres of land application area should reduce the BOD loading rate to 26 pounds per acre per day as a cycle average, and 634 pounds per acre per day as a peak daily rate. The water loading rate would be about 6 inches per year, and the nitrogen loading rate would be similarly reduced.

Approximately 190 tons of residual fruit solids are applied to the Discharger's cropland each year. A manure spreader is used to apply the solids to the fields, and they are disked within several days to incorporate the waste. The RWD did not provide characterization data for this waste, but it is expected to contain high concentrations of readily degradable organic matter and nitrogen. There is currently no specific land application area or rotation schedule for this discharge, and the RWD did not provide any information regarding typical solids loading rates. Because of the potential for nuisance conditions associated with readily degradable organic matter on the ground surface and groundwater degradation associated with the nitrogen content of this waste, this Order requires that the Discharger submit a *Solids Management Plan* for review and approval.

Domestic wastewater generated at the facility is discharged to a septic system permitted by the Yolo County Environmental Health Department. Three small reverse osmosis systems are used

for water supplied to the office, laboratory, and a small boiler. The reverse osmosis brine and boiler blowdown are also discharged to the septic system. No chemical analyses are performed in the laboratory.

After the processing season ends, the processing slabs, sumps, and pipelines are flushed with clean water. This rinse water is discharged to the land application area. Storm water runoff from the outdoor processing areas is then allowed to drain to a main drainage ditch along the southern property boundary.

Because the Discharger uses sprinkler irrigation on the wastewater land application area and drip irrigation in the fields and greenhouses, there is essentially no tailwater discharge from the site. Storm water runoff from the entire site drains to north-south trending ditches that discharge to the main drainage ditch. This ditch also receives storm water runoff and tailwater runoff from nearby farms.

There are no shallow groundwater monitoring wells at the site, but the Discharger completed a limited assessment of groundwater quality beneath the wastewater land application area in September 2006. Groundwater may be found at approximately 25 feet below the ground surface. Groundwater samples obtained in 2006 indicate that groundwater beneath the site exceeds water quality objectives for electrical conductivity, dissolved solids, nitrate nitrogen, and sodium. Because the land discharge has been ongoing for only four years at relatively low water application rates, it appears that degradation is likely due to agricultural practices in the area. Based on the limited volume of the discharge, the seasonal nature of the discharge, the character of the waste, and site-specific soil and groundwater conditions, discharge has minimal potential to further degrade groundwater quality. Therefore, groundwater monitoring is not necessary unless the discharge changes significantly or new information regarding the threat to groundwater quality becomes available. This Order includes effluent limitations that limit the wastewater to current levels and requires that the Discharger develop and begin to implement a salinity minimization plan.

Surface water drainage is to Willow Slough, which is tributary to the Yolo Bypass.

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